

In the Claims

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Previously presented) A passive optical network arrangement comprising:

a head-end station;

a plurality of subscriber stations;

a passive optical network providing optical connectivity from each of said stations to each other station;

BI wherein each of said plurality of subscriber stations is arranged to transmit on a common optical wavelength λ_1 distinct from the wavelength λ_2 on which said head-end station is arranged to transmit, and each of said plurality of subscriber stations is arranged to detect when another of said subscriber stations is transmitting on said common optical wavelength λ_1 over said passive optical network, and in which the passive optical network comprises a passive optical coupler comprising a plurality of port pairs, each port pair comprising an input port and a corresponding output port; wherein each input port is coupled to all output ports other than its corresponding output port.

6. (Previously presented) A passive optical network arrangement according to claim 5 in which each of the plurality of subscriber stations communicates with the head-end station using a carrier sense/collision detection protocol.

7. (Cancelled)

8. (Original) A passive optical network arrangement according to claim 6 in which the protocol operates at bit rates in the order of 1Gbit/s or above.

9. (Cancelled)

10. (Original) A passive optical network arrangement according to claim 5 in which said passive optical network comprises:

a passive star coupler connected by means of point-to-point optical links to each of the stations.

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Currently amended) An optical transceiver arrangement for a passive optical network arrangement including a passive optical coupler comprising a plurality of port pairs, each port pair comprising an input port and a corresponding output port;

wherein each input port is coupled to all output ports other than its corresponding output port, said transceiver arrangement comprising:

a transmitter arranged to transmit data on a first optical frequency;

a transmission detector arranged to receive, on said first optical frequency, signals from a network indicative of a transmission by another subscriber station on said first frequency;

a medium access logic unit arranged to prevent transmission on said first frequency while said transmission detector is detecting said signals from a network indicative of a transmission by another subscriber station on said first frequency;

a receiver arranged to receive data on a second optical frequency;

a common input port arranged to receive both said data transmitted on a first optical frequency and said data on a second optical frequency; and

an optical frequency splitter arranged to provide said data transmitted on a first optical frequency to said transmission detector and said data on a second optical frequency to said receiver.

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Previously presented) An optical transceiver arrangement according to claim 14 in which the transmission detector comprises a simple light detector.

19. (Original) An optical transceiver arrangement according to claim 18 in which the light detector comprises a PIN diode.

20. (Cancelled)

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21. (Previously presented) A method of operating a passive optical network arrangement comprising:

a head-end station;

a plurality of subscriber stations;

a passive optical network providing optical connectivity from each of said stations to each other station;

the method comprising the steps of:

at one of said plurality of subscriber stations transmitting a signal on an optical frequency common to said subscriber stations and distinct from that on which said head-end station is arranged to transmit, said signal being transmitted to a passive optical coupler comprising an input port and a corresponding output port; wherein each input port is coupled to all output ports other than its corresponding output port; and

at one of said plurality of subscriber stations detecting when another of said subscriber stations is transmitting on said common optical frequency over said passive optical network.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Previously presented) A passive optical network arrangement according to claim 5, wherein the passive optical coupler comprises an arrangement of optical power splitters and optical pathways connecting said port pairs, said splitters and pathways being arranged such that a signal transmitted to an input port is not returned by the coupler to its corresponding output port but is conveyed to all other output ports.

27. (Previously presented) A passive optical network arrangement according to claim 26, wherein the optical power splitters of the passive optical coupler are arranged to apply a large asymmetric power split to an outputted upstream wavelength λ_1 signal directing the largest portion of the split optical power signal towards an input port of the head-end station.

(B) 28. (New) A passive optical network arrangement comprising:

a plurality of subscriber stations; and

a passive optical network providing optical connectivity from each of said stations to each other station; said passive optical network comprising a passive optical coupler having a port set for each of said stations, each port set comprising an input port, a corresponding output port and a corresponding activity detection port, wherein each input port is coupled to all outputs ports and activity detection ports other than its corresponding output and activity detection ports.

29. (New) A passive optical network arrangement according to claim 28, wherein the passive optical coupler comprises an arrangement of optical power splitters and optical pathways connecting said port sets, said splitters and pathways being arranged such that a signal transmitted to an input port is not returned by the coupler to its corresponding output and activity detection ports but is conveyed to all other output and activity detection ports.

30. (New) A passive optical network arrangement comprising:

a plurality of subscriber stations; and

a passive optical network providing optical connectivity from each of said stations to each other station; said passive optical network comprising a passive optical coupler having

a port pair for each of said stations, each port pair comprising a combined input/output port and a corresponding activity detection port, wherein each combined input/output port is coupled to all other combined input/outputs ports and the activity detection ports other than its own input/output port and its corresponding activity detection port.

31. (New) A passive optical network arrangement according to claim 30, wherein the passive optical coupler comprises an arrangement of optical power splitters and optical pathways connecting said port pairs, said splitters and pathways being arranged such that a signal transmitted to a combined input/output port is not returned by the coupler to said combined input/output port and its corresponding activity detection port but is conveyed to all other combined input/output ports and activity detection ports.

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32. (New) A method of operating a passive optical network arrangement comprising:
a plurality of subscriber stations; and
a passive optical network providing optical connectivity from each of said stations to each other station;

the method comprising the steps of:

at one of said plurality of subscriber stations transmitting a signal on an optical frequency common to said subscriber stations, said signal being transmitted to a passive optical coupler comprising a port set for each of said stations, each port set comprising an input port, a corresponding output port and a corresponding activity detection port, wherein each input port is coupled to all outputs ports and activity detection ports other than its corresponding output and activity detection ports; and

at one of said plurality of subscriber stations detecting when another of said subscriber stations is transmitting on said common optical frequency over said passive optical network.

33. (New) A method of operating a passive optical network arrangement comprising:

a head-end station;

a plurality of subscriber stations;

a passive optical network providing optical connectivity from each of said stations to each other station;

the method comprising the steps of:

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at one of said plurality of subscriber stations transmitting a signal on an optical frequency common to said subscriber stations, said signal being transmitted to a passive optical coupler comprising a port pair for each of said stations, each port pair comprising a combined input/output port and a corresponding activity detection port, wherein each combined input/output port is coupled to all other combined input/outputs ports and the activity detection ports other than its own input/output port and its corresponding activity detection port; and

at one of said plurality of subscriber stations detecting when another of said subscriber stations is transmitting on said common optical frequency over said passive optical network.
